comprises coupling said machines, vehicle running gear or motors to a reference mass with the spring/mass vibratory force coupler of claim 1.

REMARKS

This is in response to the official action dated June 4, 2002. Reconsideration in view of the following is respectfully requested.

The claims are amended to clarify the relationship among the various structural elements. No new matter is added. It should be clear from amended claim 1 that the invention relates to a device in which a first mass is connected to a second mass by two springs in parallel. There is a damping means between the second spring and one of the masses. The damping means contains and electro- or magneto-rheological fluid, i.e. a fluid whose viscosity changes depending the voltage applied thereto. In the claimed arrangement, if no current is applied to the damping means, then the relative movement between the first and second masses is fully absorbed by the damping means. Therefore, the spring constant of the first spring only is applicable. If a full voltage is applied to the damping means fluid, then the viscosity increases to defeat movement of the piston within the fluid, thereby locking the damping means. Accordingly, movement of the second spring results when there is relative movement between the first and second masses, and the spring constant is based on the combination of the first and second springs. By varying the voltage applied to the damping fluid, the damping level can be varied, and the spring constant can be varied accordingly between that of the first spring and that of the first spring plus the second the spring.

The examiner maintains the anticipation rejection over Shtarkman under Section 102. However, Shtarkman does not teach a damper at all. Rather the reference appears to relate to a spring which is variable by way of an electrorheological fluid. The shaft 14 is biased towards the fixed element 12 by way of the spring 10 through the elastomeric fluid chambers 32, 26. However, a damping means does not have a bias;

rather, its function is to provide resistance to vibratory movements in both directi ns. Shtarkman does not provide for damping. Furtherm re, the reference does not provide for two springs (independent from each other) arranged in parallel between two masses. Rather, the reference shows a single spring means having multiple chambers. Note that the elements 22, 26 are related as upper and lower elastic portions of a fluid chamber. As Shtarkmann does not provide the damper or the independent springs arranged in parallel between two masses, it can not anticipate the claimed invention.

The rejection under section 112 is addressed in the amendment to claim 1.

Wherefore, allowance of all pending claims is earnestly solicited.

Respectfully submitted,

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MARKED-UP CLAIMS

Claim 1 (twice amended). Spring/mass vibratory force coupler with variable damping and variable spring stiffness for coupling masses to a reference mass, comprising ~~at least a vibratory~~ first mass coupled to a second mass via a first spring and an independent second spring arranged in parallel, a damper~~, and two springs~~ arranged between the second spring and ~~, wherein said damper is attached to said~~the ~~vibratory~~ first mass ~~and one of said two springs is connected between said damper and said reference mass, said coupling element~~wherein a damping function of the damper ~~being~~ may be varied based on an application of a voltage to an electrorheological or magnetorheological fluid contained therein.

Claim 2 (twice amended). Device according to Claim 1, further comprising at least one absorber mass ~~(113), which is~~ connected to the first mass ~~(11)~~ by means of a first spring/damper element ~~(115) which can be connected up if required~~ which may be connected to a voltage source.

Claim 3 (twice amended). Device according to Claim 2, wherein connection to a voltage source takes place by means of a coupling element based on an electrorheological or magnetorheological fluid.

Claim 4 (twice amended). Device according to Claim ~~1~~2, ~~wherein it has~~further comprising at least one ~~other~~ auxiliary mass ~~(114),~~ which is connected to the absorber mass ~~(113)~~ by means of ~~another~~ a second spring/damper element ~~(116)~~, which ~~can be connected up if required~~may be connected to a voltage source.

Claim 5 (twice amended). Device according to Claim ~~14~~, wherein the spring/damper ~~coupling~~ elements are a combination of torsion, coil or gas-pressure springs with dampers based on electrorheological fluids or magnetorheological fluids.

~~Claim 6. Devices according to Claim 5, wherein the spring elements are gas-pressure springs (81, 81', 82).~~

~~Claim 7. Hydraulic suspension system based on two or more gas pressure springs (81, 81', 82), wherein one gas pressure spring (81) has an ERF or MRF damper element (86) and is connected to another gas pressure spring (82) by at least one other damper or coupling element (87) based on ERF or MRF.~~

Claim 8 (three time ~~twice~~ amended). A method for modifying mechanical natural vibrations in machines, vehicle running gear or motors selected from the group consisting of balancing machines, machine tools, unbalance generators, testing machines, resonance testing machines, alternate-bending machines, screen conveyors, eccentric presses, crank mechanisms, vibration and resonance drives, vibratory gear mechanisms, internal combustion engines, electric motors and engine mounts which comprises coupling said machines, vehicle running gear or motors to a reference mass with the spring/mass vibratory force coupler of claim 1.